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Objective

To continually break new ground in the field of computer graphics at a respected game, film or research institution through the pioneering of new methods or through creative applications of existing methods.

Education

- Northwestern University Computer Science PhD. Program, Fall 2002 to Spring 2003 – on leave.
    Research Assistantship in Computer Graphics under Benjamin Watson.
- North Central College, Computer Science B.S., December 2001.
    Advanced training: 3D Computer Graphics using OpenGL
                        Advanced Computer Graphics for 3D Game Programming
- Elgin Community College, 1998-1999.
- Embry Riddle Aeronautical University, Fall 1997.
- Dundee Crown High School, June 1997.

Skills

- Computer Languages and API's:
    C/C++, OpenGL, Cg, RenderMan Shader language, FLTK, 3ds MaxScript, Flash ActionScript, Assembly , HTML, Perl, PalmOS
- Operating Systems:
    Unix based OS's, Windows, Mac OS.
- Development of 3D renderers, raycasters, UI tools, and advanced real-time 3D graphics utilizing lighting, texturing, environment mapping, vertex/pixel shading, etc.

Work Experience

- Argonne National Laboratory - June 2000 to present:
    - **Programmable Hardware-based Vis:** Engineered a volume renderer for the TeraGrid supercomputer utilizing programmable pixel shading capability of Nvidia graphics boards. Created pixel shading tool used to calibrate color/geometry/brightness of tiled displays.
    - **RenderMan:** Developed a scientific data volume shader using RenderMan shading language and C/C++ (in shadeops). Implemented volume lighting and shading, isosurface normal calculation, and functionality allowing polygonal data to be mixed with volume data.
    - **Animation Path Planning:** Created utilities for use with RenderMan volume shader including an OpenGL 3D Bezier curve based camera path-planning application for the CAVE VR device.
    - **Advanced VR Programming:** Designed interactive human factors software for testing human-computer interaction in the CAVE/Tiled Display devices.
    - **Device Integration:** Developed PalmOS-based front ends to Unix based VR devices. Developed Compaq iPaq software in Linux including a FLTK-based front-end to a tiled display movie player.
    - **Advanced Bioinformatics Visualization:** Designed interactive graph layout/display API to serve various projects including an OpenGL based bioinformatics tool. Implemented force-directed graph layout algorithms (spring-energy based models) for node placement.
- Northwestern University – September 2002 to June 2003:
    - Researched/implemented procedural method of generating realistic 3D models of urban structures.
- North Central College, Linux Network Administrator, 1999-2000:
    Setup and maintenance of Linux network of Intel-based graphics machines.
- Willow Creek Community Church (volunteer work), 1991-1993:
    Non-linear video editing, CG modeling/animation via Strata Studio Pro.

Special Accomplishments

- Accepted with full financial support to Northwestern University C.S. Graduate School.
- Transfer Academic Scholarship from North Central College - $7000 per year.
- Presidential Scholarship, Embry Riddle Aeronautical University: $3000/yr, new laptop every 2 yrs.
- First place in the University of Illinois Rube Goldberg Engineering competition.

Sample Images of Renderman Work
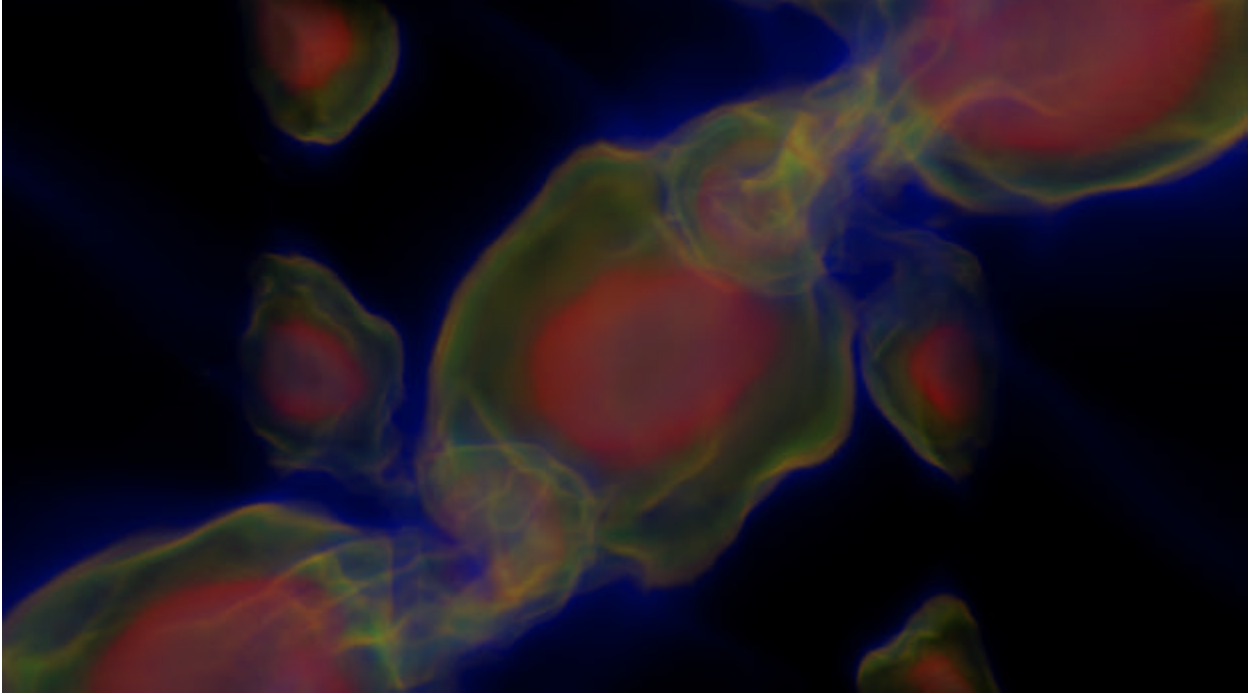
This is a rendering of a simulation of gravitational collapse of an interstellar gas cloud (known as the Jeans instability process). A cloud of gas in the galaxy collapses under its own gravitational field into condensed cores that eventually originate stars.

Above is an image representing the pressure of blood along the z-axis (the axis running through the center of the main tube) as it flows through an arteriovenous graft. Areas of high pressure are represented by the bright pink, blue and yellow, while low pressure is represented by green and maroon.